Attachment D

Decision Making and Institutional Performance Working Group
Results and Homework

Facilitator: Bryan Parker, INEEL

Program Activity: Improve interaction between DOE and the community

Capability: Involving all levels of the community in the conduct of long-term stewardship

Target: Design and implement a stewardship program that can bring community objectives in line with DOE objectives and DOE objectives in line with community objectives

Task Description: Tasks are divided here into two sets: those that serve to generate new knowledge and those that serve to implement established processes

Techniques for Knowledge Generation:

- ethnographic research
- survey research
- key-informant interviews
- continuing community panels
- evaluation research

Techniques for Process Development:

- opening up lines of communication so that information gathered about the community is conveyed to DOE personnel and information about DOE policies and limitations is conveyed to the community

Knowledge Generation Tasks:

1. Learn as much as possible about the values, beliefs, and interests of the community at issue, including (a) the perceptions of risk and (b) the sense of DOE credibility that obtain there, and incorporate that knowledge in every phase of the stewardship program.

2. Keep a trained scientific eye through all of the methods mentioned above on changes that occur in the demographic composition or social character of the community so as to be able to modify stewardship arrangements when necessary.

3. Conduct regular program evaluations for the duration of the project and assure that mechanisms are in place for communicating their results to responsible DOE officials.

Process Tasks:

4. Open channels of communication with relevant communities by acknowledging and accepting responsibility for past failures, both at the site in question and elsewhere; by making a special effort to explain how those failures came about, and to use that explanation as a basis for communicating the limitations under which DOE in particular and the federal government in general has to operate; and by enunciating as clearly as possible what values shape DOE policy. Special attention should be paid to information generated by task 1(b) above.

5. Establish and maintain mechanisms in the stewardship program that permits it to remain stable, predictable, and responsible over the long term and not sensitive to shifts in congressional mood, biannual elections, and the politics of the moment. We recoginze that this will require a major shift in emphases.

6. Agree on operation ground rules with community members representing the full range of community interests, and confer with those representatives on a regular basis as the work continues.

Range of Applicability: The above tasks apply to all closure sites. In addition, information from the first sites involved should be made available to subsequent sites in the form of pilot studies

Needed R, D and D: All of the techniques necessary for the above tasks are fully developed and depend only upon commitment and good-will on the part of those entrusted with the responsibility for carrying them out.

Duration: Tasks 1, 2, 4, 5, and 6 can be implemented as soon as remedial sites are identified. Task 3 can follow upon them within a matter of months. The first results of ethnographic research will be available within weeks of the initiation of the project, and will continue throughout its duration; the first wave of survey results should be available within a similar span of time; but all of the above are intended as ongoing sources of information.

Sketch? [I could not produce a sketch on e-mail even if I knew how to do it, but the one now contained in Bryan Parker's memorandum of 27 March is clearly inadequate to the task defined above. I think Liz's sketch provides a good model for the above purpose as well. We need somehow to convey that the evaluation research may follow the other tasks by a period of time, but that the information developed at each stage of the project is meant to feed back on the ongoing tasks, both research and process. Right?]

Program Activity: Develop improved reliability and constancy in long-term stewardship (LTS) institutions.

Capability: Periodically revisit cleanup and long-term stewardship decisions to ensure continuous improvement.

Target:
- Develop and utilize a decision process that requires revisiting cleanup and LTS decisions, and develop and utilize the tools necessary to enact this decision process.
- Demonstrate continuous improvement of cleanup and LTS decisions
- Reduce long-term cost
- Improve stakeholder support

Task Description: Tasks have been grouped into two sets: those needed to generate the knowledge necessary to develop and implement the mechanisms that will ensure the periodic revisiting of LTS and cleanup decisions; and those needed to develop, evaluate, and modify appropriate mechanisms to ensure periodic revisiting and improvement of LTS and cleanup decisions.

Techniques/Technologies: The knowledge generation tasks are essentially techniques. Appropriate techniques for accomplishing the knowledge generation tasks include:

- literature review
- review of case studies
- key informant interviews
- expert evaluation of reviews and information gleaned from interviews
- stimulate research to support a robust ability to revisit cleanup and LTS decisions

Appropriate techniques for the process development, evaluation, and feedback tasks include:

- working with stakeholders, legal specialists, economists, social scientists, public participation professional, stakeholders and appropriate agency personnel (regulatory and regulated) to develop necessary mechanisms.
- Conducting evaluation research on all task products.

Knowledge Generation Tasks:

1. Review existing capabilities and drivers to periodically revisit cleanup and LTS decisions and ensure continuous improvement.
        To understand what legal drivers and mechanisms currently exist to ensure revisiting of cleanup and LTS decision, including but not limited to review of national law, state and local laws, and multi-agency cleanup agreements throughout the DOE weapons complex. To understand what capabilities exist currently to implement and to ensure continuous implementation of a review process. And, to understand what capabilities exist to ensure improvement of cleanup and LTS decisions. In all cases there

will be an assessment of the strengths and weaknesses of current capabilities.

2. Review major factors in institutional failures.

To understand what contributes to failure and success in institutions. Since LTS requirements may last a long time, enduring institutions, or mechanisms to ensure periodic revisiting of current decisions will be needed. It will be important to determine which institutional attributes should be encouraged and which should be avoided to establish an enduring review and improvement process.

3. Review possible alternatives to present conditions.

To understand how LTS institutions will weather and perform in a variety of conditions. Political, social, and economic conditions change. It will be important to gauge the ability of LTS institutions to continue and perform under a variety of conditions.

4. Review case studies showing established records of performance.

To understand what has worked and what has not thus far in the establishment and performance of enduring institutions, including the degree to which the original purpose is still served. Examples of institutions performing over a long period of time exist. It is important to determine what information can we glean from these examples in setting up LTS institutions.

5. Workshop to evaluate reviews

A workshop or series of workshops would evaluate information from the above reviews, and make recommendations for development of a robust system ensure periodic reviews and improvement of cleanup and LTS decisions. The workshops would include specialists from appropriate disciplines and representatives from all affected parties.

6. Elicit creative ideas on research to support a robust ability to meet the target.

Current knowledge about building enduring institutions is limited. More research is needed in this area. This would include research into institutional success and failure, durability of legal structures, and public participation over long periods of time.

Process Development Tasks:

1. Develop a legal and regulatory structure

There is no legal or regulatory structure that has been developed specifically to serve LTS needs. There are some provisions in existing laws and regulations that move toward periodic revisiting and improvement of site conditions (e.g. CERCLA). However, these fall short. A comprehensive legal and regulatory structure that would require an periodic reassessment of all cleanup and LTS decisions (including a reassessment of institutional controls) is needed.

2. Develop a cost mechanism that considers full life cycle cost, including social cost.

Cost is a primary factor in decision making. Usually these are financial costs over a particular budget cycle. The impacts of incomplete cleanup of DOE weapons sites will have costs that stretch far beyond the typical budget cycle. Financial costs associated

with maintaining engineered and institutional controls will stretch over long periods of time. Beyond financial costs directly related to maintaining safety at contaminated sites, there are costs to communities , financial and other, accrued as a result of hosting these contaminated sites. A mechanism to measure all costs to all sectors is needed to make the most prudent decisions about improvements to cleanup and LTS decisions.

3. Analyze equity impacts

Decisions about changes to cleanup and LTS decisions will need to consider issues of equity: equity among regions; equity among generations; and equity among competing needs. An effective mechanism for such analysis needs to be developed and utilized.

4. Implement an improved organizational structure of incentives and sanctions for robust periodic revisit and continuous improvement.

Organizations responsible for LTS will need to develop a system of rewards and sanctions that ensure that periodic revisiting happen in a robust manner. Monitoring cleanup and LTS decisions runs the hazard of becoming a rote task, making particular attention to the development of regime of incentives and sanctions important. This regime will need to be revisited on a periodic basis to ensure that it remains robust.

5. Assure sustainable and adequate funding

Funding will need to be available to sustain LTS institutions, provide for ongoing research to improve cleanup and LTS decisions, and to implement improvements as warranted. Without guarantees of such funding the durability of an institution that can revisit cleanup and LTS decisions on a periodic basis and implement improvements as warranted is questionable.

6. Develop and implement an R&D program to force technology improvement.

Current decisions for limited cleanup are being driven in large part by limits of current technology to the job in a cost effective and ecologically responsible manner. If improve cleanup decisions new technologies will need to be developed. Aggressively pursuing solutions will be key to the development of a robust LTS institution. The possibility of implementing improvements will help to ensure that LTS remains active rather than passive or rote. Improvements in institutional controls will also need continuing research.

Timeframe:
Knowledge Tasks
Reviews, and evaluation of these reviews could be completed in a two year timeframe. Initial research into creative ways of building an enduring institution can be completed in a two to five year timeframe. This could be an ongoing activity.

Process Development Tasks
Initial implementation and development of process development, evaluation and feedback could be completed in a two to five year timeframe. Review and improvement of all tasks would be ongoing.

Program Activity: Develop improved reliability and constancy in long-term stewardship (LTS) institutions

Capability: Understanding and implementing the structures, activities, and conditions necessary for institutions to perform and improve long-term stewardship responsibilities

Target: Design and implement institutional mechanisms that sustain and improve long-term stewardship

Task Description: Tasks are divided into two sets: those that generate knowledge on possible institutional mechanisms; and those process tasks that are needed to develop, periodically review, and modify, as needed, the mechanisms that have been selected for implementation.

Techniques/technologies: The following techniques are appropriate for knowledge generation tasks:
- Review of case studies, relevant documents, and other literature;
- Key-informant interviews;
- Exert review panels;
- Ethnographic and comparative case studies;
- Content analysis; and
- Analyses and synthesis.

The techniques are well established but the state of knowledge as to what institutional mechanisms are effective for LTS is very immature.

These techniques are appropriate for process tasks:
- Involving LTS managers and others in evaluating options;
- Involving LTS managers and others in conducting pilot studies;
- Involving LTS managers and others in full-scale implementation; and
- Conducting evaluation research on the tasks products.

Knowledge Generation Tasks:

1. Identify major forms or pathways of institutional failure and success

To understand the major factors contributing to the failures and successes of institutions in order to improve institutional reliability and performance. To understand how these factors must be taken into account in the development of organizations capable of adapting to the new knowledge and new circumstances regarding risk, science, and legitimacy associated with long-term stewardship. To understand how the range of tasks associated with long-term stewardship may require multiple organizational arrangements that, among other capabilities, decentralize decision making authority, require specialization of function among different organizational units, and feature appropriately permeable boundaries.

2. Identify conditions under which physical and land use controls do or do not remain effective

To acquire information on the institutional and legal structures and selection processes and bases associated with the failure or success of land use controls at a variety of sites. To understand the allocation of authority and responsibility for monitoring, enforcing, and evaluating the performance of successful and failed land use controls. Land use controls include institutional controls (mechanisms that have a legal basis such as deed restrictions, zoning, permit programs), barriers (fences and gates), and notification or education systems (e.g., signs, public awareness programs, fish consumption advisories, museums).

3. Identify funding mechanism failures and successes
To gain a better understanding of the strengths and weaknesses of a variety of mechanisms that could contribute to sustained and adequate funding of the personnel, policies, and methodologies necessary to carry out long-term stewardship activities. To study the objectives, structures, and effectiveness of the following possible funding mechanisms and others that will emerge: federal trust funds; federal organizations responsible for maintaining control and oversight of land and its uses; public enterprises; quasi-public organizations; insurance tools; and annual congressional appropriations.

4. Learn what is known about social factors that influence risk through time
To compile the existing knowledge of how conceptions of risk change through time. To assess the gaps in that knowledge and initiate studies to address them.

Process Tasks:

5. Develop adequate and reliable funding mechanisms
To identify existing mechanisms or develop new or hybrid mechanisms to provide adequate and reliable sources of LTS funding.

6. Develop "early warning"/near miss tracking and response system
To create systems useful to organizations in detecting the indicators of a trend toward LTS failure and developing contingency plans. To establish conditions for organizations to channel information about their own failures, as well as those of other organizations, so that organizational learning, adaptability, and resilience are enhanced.

7. Identify mission owners and roles and responsibilities of stewardship entities
To establish the criteria and processes for establishing who owns the LTS mission and how ownership changes through time. To delineate the roles and responsibilities of entities with LTS involvements.

8. Develop appropriate organizational cultures with supporting incentive and sanction structures
To develop organizational incentive structures that prize innovation, flexibility, creativity, and dissent in order to increase the range of alternatives for responding to problems as they arise. To develop organizational sanction structures that are clearly understood, commensurate with the effects of violations, and sufficiently robust.

9. Develop mechanisms to ensure continuous scanning for social factors that influence risk through time

　　　To design and implement the methods necessary to identify, assess, and respond to social factors such as economic, demographic, political, and regulatory trends, and hazard averseness that influence conceptions of and reactions to risk.

10. Develop and implement periodic review mechanisms

　　　To prepare and incorporate systems and methods to periodically assess the performance of the LTS institutional mechanisms.

Duration: Knowledge tasks could be completed in a year. Process tasks could be completed in six months to one year.

Pathway:
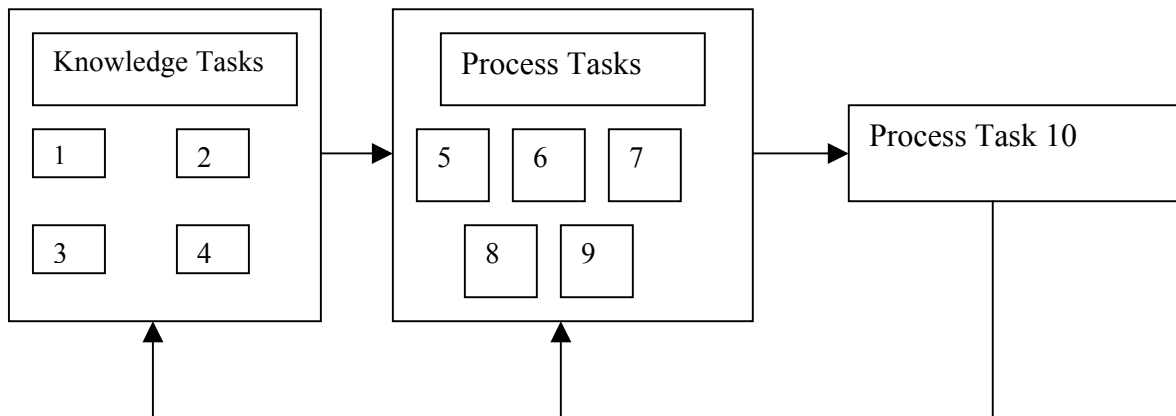
Filename: institutional mechanisms

Program activity: Improve institutional credibility and community interaction

Capability: Knowing that which affects public trust and confidence in relationship to long term stewardship

Target: Finish research on actions that can engender trust and confidence, and initiate full-scale field use at all sites.

Task description: Tasks are divided into two sets: those that generate knowledge on possible institutional mechanisms; and process tasks that are needed to develop, periodically review, and modify, as needed, the mechanisms that have been selected for implementation.

Techniques for knowledge generation: scientific studies of values and risk perception

- Social scientific surveys
- Analytic literature reviews and syntheses
- Expert review panels
- Ethnographic research and comparative case studies
- Evaluation research
- Decision analysis
- Community involvement studies

Current maturity level of knowledge generation techniques: these techniques are highly developed and could be fielded easily with a modicum of support

Techniques for process development

- Enhanced outreach programs
- Improved two-way communication between DOE personnel and community
- Citizen monitors
- Worker committees/ worker input (for larger sites or sites where only part is in stewardship)
- Local technical training (vo-tech); employ community members

Current maturity level of process development techniques: some have been used successfully in other venues; the applicability of all, for LTS sites, is to be determined

**Range of applicability for all techniques**: all closure sites

Needed RD&D: Studies on institutional performance, reliability, and failure, and on relationships between organizations and communities need to be reviewed to determine applicability

Knowledge generation and process tasks and timeline

1. Literature reviews to identify the most promising approaches (6-8 researchers) (12 months)

1a. After 6 months, conduct benchmark "evaluation research" at selected sites; this will be the baseline study (6 months)

2. Expert panel review (multi-discipline, include scholars from Europe, some from other industries, food processing, etc.) to pick the 5-6 most promising approaches. Include DOE site managers and people from around the sites (site-specific advisory boards, intervention groups) - 2-3 meetings over a couple months (6 months total)

3. Identify pilot studies (good match between approach and site-specific situation, buy-in by site manager) and conduct 2-3 pilots per approach (Consider UMTRA sites, when appropriate). Some may be combined trial of multiple approaches in one pilot. (Phase 1 - 12 months, expanded Phase 2 - 48 more months, after which it is institutionalized.)

4. Assess pilot study results after completion of pilot phase 1. Site interviews, etc. Percentage of different perspective groups that are satisfied, etc. "evaluation research" - present results to Peer review panel. (Include more site managers) Produce report. Identify sites for initial full scale fielding. Include incentive funding for selected sites. 2 meetings (early stage and final with site managers, etc.) Pay for people from the pilot sites to come and present - managers, CAB types, etc. Lots of time for informal interaction. (6 months total)

5. Full scale implementation

Pathway:

| Timeline | | | Phase 1: 12 | |
| In months | 12 | 2 | Phase 2: 48 | 6 |
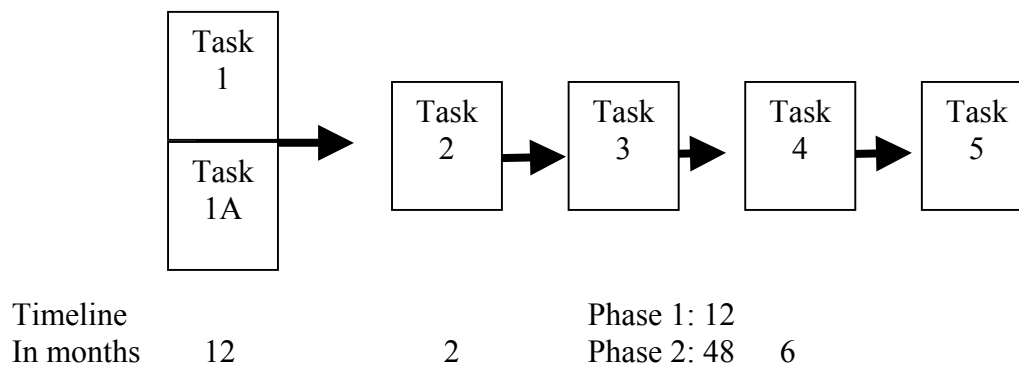
Capability 4.2: Improve knowledge management capability (i.e., Improve ability to identify, document, retain, retrieve and display relevant long-term stewardship information).

Target: Design and implement knowledge management capabilities that support sustainable and continuously improving LTS.

Task description: Tasks are divided into two sets: *knowledge generation tasks* that generate new knowledge on the scope of information needs and better ways to preserve, retrieve and display retained information; and those *process tasks* that are needed to develop, implement, maintain, periodically review, and modify as needed, the institutional and technical approaches and processes that have been selected for implementation.

Knowledge Generation Tasks:

1. Identify desirable characteristics of knowledge acquisition and management systems that promote effective, sustainable and continuously improving LTS.
2. Identify data elements that take into account the needs of all users, both DOE and non-DOE, via implementation of logical process for identifying and retaining information necessary for effective LTS [links to 3.4A of SSIC, but is understood to be broader than deployment of technology options *per se*];

Techniques (for knowledge generation task)

- Stakeholder forums
- Expert panels
- Expert elicitation techniques
- Inter- and intra-agency task forces
- Professional consultants on knowledge management systems development
- Decision analysis (esp. for task 1)
- Literature reviews (esp. for task 1)

Current maturity level of knowledge generation techniques: Developed

Process Tasks:

3. Develop regulatory/policy structure on information retention and transfer that supports LTS objectives;
4. Develop capability to adapt knowledge management systems to technological, societal and institutional changes that occur through time [links to capability 2.2 of DMIP]
5. Design systems to collect, analyze, manage, retain, and communicate in appropriate formats, historical and contemporary data, to meet needs of DOE and non-DOE users [links to 3.4B of SSIC]
6. Develop sustainable, transparent system to support LTS decisions and periodic reconsideration of information support;
7. Develop process for on-going evaluation of knowledge management system;

8. Develop process for periodic modification as necessary of knowledge management system

Techniques for process development

- Regulatory and policy review (for documents retention and transfer)
- Evaluation research
- Expert panels and expert-elicitation techniques
- Organizational studies
- Decision-support systems
- Geographic information systems
- Database management systems
- Community outreach and involvement processes
- Strategic planning
- Organizational change and/or restructuring

Current maturity level of process development techniques: Some developed; others in development or being pursued

Range of applicability for all techniques: all closure sites

Needed RD&D: Development of LTS performance metrics and plausible scenarios for LTS failures at individual sites; use of knowledge gained to aid identification of information needs and modes of collection, retention, retrieval and display that enhance ability to anticipate and detect potential LTS failures or other concerns; research to understand characteristics of information that most contribute to decision transparency; continued development of GIS, database management, and other systems and tools that promote efficient and effective information retrieval and display that promotes decision transparency; organizational studies to identify mechanisms and implementation approaches that achieve effective knowledge management over time, including ability to identify and make modifications to overall knowledge management system.

Knowledge generation tasks and proposed time line:

1. Literature reviews, stakeholder and expert panels to develop vision for knowledge management system (Task 1), 6 months.
2. Parallel identification of necessary data elements, data sources, data quality objectives, etc., via similar processes, including possible agency task force (Task 2), 6 months.

Process tasks and proposed timeline:

1. Regulatory and policy review, with development of proposed regulatory and/or policy revisions (Task 3, and Tasks 7 and 8 in part), 6 months. [Does not include time for policy adoption, approx. 6-12 mos.]

2. Parallel development of database management and GIS systems architectures and prototypes (Tasks 4 and 5, in part) 6 months.
3. Development of operational GIS, DBMS systems (Tasks 4, 5, 6, in part) 12-18 months.
4. Testing and adjustment of systems developed, with both DOE and non-DOE users, with emphasis on effectiveness in supporting transparent LTS decisions and oversight. (Tasks 6 and 7, in part), 6 months.
5. Systems implementation, including process for periodic review and modification (Tasks 6 and 7 in part, Task 8) 6 months.

Sketch of Task Relationships:
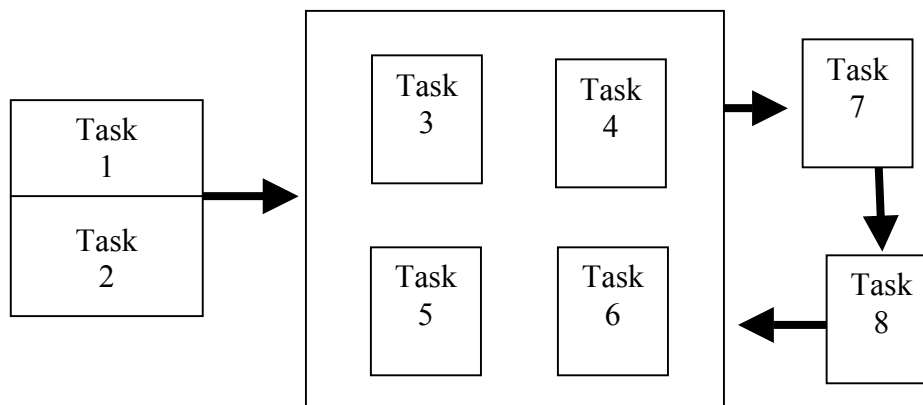
Timeline
In months

  6 months   18-24 months   6 months